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| 10/713,410 | 11/14/2003 | Bryan M. Cantrill | 03226.352001; SUN040254 | 7010 |

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EXAMINER

VO, TED T

| ART UNIT | PAPER NUMBER |
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2191

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08/09/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/713,410

Applicant(s)

CANTRILL, BRYAN M.

Examiner

Ted T. Vo

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2007.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This action is in response to the amendment filed on 05/08/2007.

Claims 1-25 are pending in the application.

Response to Arguments

2. The arguments given in Remarks, filed on 05/08/07 have been considered but not persuasive.

With regards to the Applicants' arguments in the remarks for traversing the rejection under 35 USC 112 second paragraph, it should be noted that the feature, "anonymous consumer state", particularly with "state", used as a limitation but the claims does not provide any functionality associated with this limitation. Applicants merely directs this as the teaching in the specification, [0030] and [0032]. However, the specification as directed by Applicants does not provide any adequate meaning or definition for the term used as a limitation. The limitation that is attached in the claims without clear meaning or without included further limitation to functionalize the limitation remains causing the claim indefinite.

Regarding the arguments for traversing the rejection under 102: It should be noted that a claimed invention in which its effort is for changing size, shape, adding ingredients, making portable, making integral, making separable, rearrangement of elements, etc., does not cause any patentable differences over the prior art (In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966); In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950), etc...).

In the remarks, the argument appears not to discuss the patentable differences of the claims, for example, the arguments alleged that

"Specifically, the Examiner has asserted that a "code patch heap" is equivalent to a "property file." See Office Action mailed February 8, 2007, p. 3. By asserting that a code patch "heap" is equivalent to a property "file," the Examiner is completely misconstruing the broadest ordinary meaning of the term property "file.""

but, it appears attacking the language specific used within the reference and the claims.

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Regarding the reference, Tamches provides a privilege user program associated with code Patch Heap as seen in p. 27, Figure 3.1, seen in p. 49, Figure 4.1. Particularly, see, p. 49,

Splicing overwrites one machine code instruction at the desired *instrumentation point* with a jump to a *code patch*. In the simplest case, the code patch contains the instrumentation code generated at run-time, the overwritten instruction, and a jump back to the instruction following the instrumentation point, as shown in Figure 4.1. The net effect inserts the generated code before a desired machine code instruction.

It's clear that splicing is loading instrument code into code patch which is at kernel level. Also, refer to Figure 4.7. Thus, a user could splice instrumentations into a kernel at particular points. The specification of the application does the same (See Specification Figure 2).

The trace framework of Tamches requires rerunning the code patch "file", where the code patch is seen in Figure 4.7, p. 58. With this file running (discussed in 3.2 Bootstrapping, p. 27, or seen in Figure 3.1), it provides profile information, within kernel and user programs, includes data cache miss or bottlenecks, or arbitrary generated by the tracing during the running kernel associated with user programs (p. 70-71), etc.). These functions reasoned by the Examiner perform tracing an instrumented program in the manner of the claims.

It should be noted that the specification fails to provide adequate teaching to make claimed languages distinct from code patch or the splicing process, where code patch in the Figure 4.1 clearly is a file and it provides properties to enable tracing. It should be noted that the whole functionality of the reference should be considered, rather attacking only on the language specific.

The arguments in the remarks fail to address any patentable advantage over this reference. It should be noted that changing size, shape, adding ingredients, making portable, making integral, making separable, rearrangement of elements, etc., cannot make patentable advantage over a prior art.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-25 have a feature, "anonymous consumer state". However, the specification fails to provide an adequate description for this feature. A claim feature that is unclear and vague would cause the claim to be indefinite because it would be differently interpreted in various ways. The interpretation of this feature, "anonymous consumer state", is whatever information traced at an instrumentation point.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States:

6. Claims 1-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Tamches, "Fine-Grained Dynamic Instrumentation of Commodity Operating System Kernels", University of Wisconsin, 2001.

Given the broadest reasonable interpretation of followed claims in light of the specification.

As per Claim 1: Tamches discloses, ***A method for tracing an instrumented program*** (Privileged user program with instrumentation) ***on a system during booting*** (Figure 3.1, p. 27); ***comprising:***

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loading object code defining enabling information (see p 27, i.e. instrument code) **into a property file**

(a privileged user program associated with Code Patch Heap, for example, see p. 49, Figure 4.1, "the Code Patch contains ...") **associated with a tracing framework** (i.e. 'kerninststd');

rebooting the system (i.e. kerninstd is attached to a running kernel, discussed in 3.2 Bootstrapping, p. 27, or seen in Figure 3.1);

processing the property file to enable the tracing framework (i.e. mapping Code Patch Heap heaps into kernel space of the running kernel), **wherein enabling the tracing framework comprises creating an anonymous consumer state** (i.e. profile information, within kernel and user programs, includes data cache miss or bottlenecks, or arbitrary generated by the tracing during the running kernel associated with user programs (p. 70-71), etc.): **anonymous consumer state**); **and**

tracing the instrumented program using the enabled tracing framework (Figure 3.1).

As per Claim 2: Tamches discloses, *The method of claim 1, further comprising:*

associating the anonymous consumer state with a consumer (e.g. a privileged user programs that is run with the kernel, the system of Figure 3.1 can trace data cache miss, bottle neck, etc, (Chapter 5, p. 70).

As per Claim 3: Tamches discloses, *The method of claim 2, wherein the anonymous consumer state is converted to a consumer state after the anonymous consumer state is associated with the consumer* (i.e. the trace information associated with the privileged user program).

As per Claim 4: Tamches discloses, *The method of claim 3, wherein the consumer can access the information obtained during tracing associated with the anonymous consumer state, after the anonymous consumer state is associated with the consumer* (See Figure 3.1, within privileged user programs and kernel).

As per Claim 5: Tamches discloses, *The method of claim 1, further comprising:*

loading a kernel into the system, wherein the kernel is configured to load the property file as soon as possible after the kernel is loaded (See Figure 3.1, tracing kernel).

As per Claim 6: Tamches discloses, *The method of claim 1, further comprising:*

defining a tracing operation source code (Figure 3.1 instrumentation); **and**

generating the object code using the tracing operation source code (Figure 3.1, e.g. Patch code).

As per Claim 7: Tamches discloses, *The method of claim 1, wherein the enabling information defines a probe to enable and an action to perform when the probe is encountered during tracing of the instrumented program* (instrumentation of patched code defines a probe).

As per Claim 8: Tamches discloses, *The method of claim 1, wherein the property file is associated with a tracing framework driver* (See Figure 3.1, where Code Patch Heap is associated with kerninstd).

As per Claim 9: Tamches discloses, *The method of claim 7, wherein the property file is processed when the tracing framework driver file is loaded into the system* (the operating mechanism of the system in Figure 3.1).

As per Claim 10: Tamches discloses, *The method of claim 1, wherein information obtained during tracing associated with the anonymous consumer state is stored in a kernel-level buffer* (such as logs information, or kernel memory, p. 56).

As per claim 11: Tamches discloses, ***An apparatus for tracing an instrumented program on a system during booting,***

comprising: a processor configured to execute a tracing framework (e.g., p. 27, Figure 3.1, a framework such as Application(s) of Dynamic Kernel Instrumentation + kerninstd), ***wherein the tracing framework is configured to support an anonymous consumer state*** (e.g., whatever states of user-programs and kernel programs used in the system of figure 3.1) ***and configured to trace*** (the system in the Figure 3.1 is configured) ***the instrumented program using the anonymous consumer state*** (a program with patch code from Code Patch Heap attached in the kernel space); ***and***

a memory configured to store a property file, wherein the property file is configured to store an object code (code patch) ***defining enabling information to create the anonymous consumer state*** (Code Patch Heap, or the use patch code downloaded from a network node (Client) configured to emit at an instrumentation point. For example, patch code such as ELF object file discussed in p 51. Furthermore, see Figure 4.1 in p. 49, it shows a mechanism configured to implement patch code at an instrument point).

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As per claim 12: Tamches discloses, *The apparatus of claim 11, wherein the processor is further to execute a consumer, wherein the consumer is configured to claim the anonymous consumer state* (See Figure 3.1, it is configured to perform the functionality of this claim).

As per claims 13-14: See rationale addressed in claims 2-3.

As per claim 15: See rationale addressed in claim 4.

As per claim 16: Tamches discloses the functionality of claim 16 in Figure 3.1.

As per claim 17: Tamches discloses the functionality of claim 17, as such runtime kernel.

As per claim 18: Tamches discloses the functionality of claim 18, as such the probe at an instrument point in a kernel code gram shown in Figure 4.1, p. 49.

As per claim 19: Tamches discloses the *apparatus of claim 11, wherein the object code is generated using tracing operation source code*, such as using the mechanism of Figure 3.1, a patch code is created and emitted in kernel code.

As per claim 20: See rationale addressed in claim 11, where a node is a client or a user whose computer uses, or is connected to, the framework shown in Figure 3.1.

As per claim 21: See rationale addressed in claim 12.

As per claim 22: *The network system of claim 20, further comprising:*

*a tracing framework driver associated with the property file configured to
instantiate the tracing framework; and*

*a kernel configured to load the tracing framework driver and configured to process
the property file to enable to the tracing framework.*

See Figure 3.1.

As per claim 23: See rationale addressed in claim 1.

As per claim 24: See rationale addressed in claim 2.

As per claim 25: See rationale addressed in claim 6.

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Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted T. Vo whose telephone number is (571) 272-3706. The examiner can normally be reached on 8:00AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Y. Zhen can be reached on (571) 272-3708.

The facsimile number for the organization where this application or proceeding is assigned is the Central Facsimile number **571-273-8300**.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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TTV
August 03, 2007

A handwritten signature in black ink, appearing to read "Ted Vo", with a stylized, cursive script.

TED VO
PRIMARY EXAMINER